Pre- and Post-Disinvestment Performance Evaluation of State-Owned Utility Sector Enterprises in India: The Way Forward

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Shrabana Tripathi*

Bhanu Pratap Singh**

Abstract

The consensus in recent times is that state-owned firms are not as profitable as their private counterparts. Therefore, disinvestment policies are put in place to decrease the government's involvement in the economy and encourage private sector participation to increase the performance of firms. The present study examines the profitability, financial performance, and operating performances of state-owned utility sector firms in India that were successively disinvested through public offering mode from 2011 to 2020. Using a sample of the top ten utility sector firms listed in the National Stock Exchange, in 2023, the firm performance is assessed through a range of financial ratios, including return on equity return on sales, return on assets, sales efficiency, net income efficiency, and leverage. The Wilcoxon rank test compares the firms' before and after disinvestment performance.

Panel data techniques have been used to evaluate the impact of disinvestment on performance indicators. The findings show a significant enhancement in the financial performance of the sample firms, while there is an insignificant change in profitability and operating performance. The current study provides new empirical findings on how ownership reforms through disinvestment have affected the performance of state-owned utility sector firms in India.

*Research Scholar, Department of Economics, Banaras Hindu University Varanasi, U.P, India

**Assistant Professor, Department of Economics, Banaras Hindu University Varanasi,U.P, India

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Introduction

State-owned firms play a vital role in the Indian economy. They operate in strategic and citizen-centric sectors and make substantial contributions to the country's economic output. In addition to their direct impact, the products and services provided by these firms have far-reaching impacts on people's livelihoods. They stimulate growth opportunities, generate employment, support the government's strategic agenda, and drive technological progress and innovation.

Establishing state-owned firms gained momentum after India's independence when private sector lacked the willingness and capacity for large capital-intensive investments (Enterprises, 2021-22). The number of state-owned firms has grown significantly over the years, reaching 260 in FY 2011-12 and increasing to 389 in FY 2021-22. According to the Public Enterprise Survey 2021-22, out of the 389 state-owned firms, 248 are operational, generating a total operating income (Gross Turnover) of ₹31.95 lakh crore. These firms employ 1.462 million people across various sectors. Considering the challenges caused by the pandemic of COVID-19, state-owned firms have demonstrated resilience by scaling up their investments to support economic growth. These figures highlight the significant role played by these firms in the Indian economy, contributing to stability, employment, innovation, and opportunities for various sectors.

Despite the contribution of state-owned firms being widely recognized for the country's progress, concern shave been raised regarding their poor financial performance. Since the central government's revenue account initially turned negative in the mid-1980s, this issue has become very apparent (Nagaraj, 2005). During this time government faced various challenges related to balance of payments, budgeting, and fiscal imbalance leading to efforts to privatize state-owned firms. Structural reforms aimed to reduce the public sector's participation in economic activities and promote the growth of the private sector by transferring ownership structure and management control from the public to the private sector. Moreover, privatization aims to foster a more dynamic and competitive business environment. This policy shift is intended to create opportunities for private enterprises to flourish and contribute to overall economic development (Gouri, 1997).

The privatization drive in India has faced numerous hurdles and challenges. Despite the goal of privatizing state-owned assets to boost public finances and navigate global economic uncertainties, progress has been slow. Since 2014, only one major firm has been privatized, and several other candidates have stalled. The market capitalization of the remaining seven listed companies earmarked for privatization is approximately $25 billion. Legal and insolvency issues have reduced the initial list of 36 companies to just 17 (seven listed and ten unlisted). The Tata Group's acquisition of Air India in 2021 for $2.2 billion stands as the only significant success in the Indian government's privatization efforts so far. However, this success came after two previous unsuccessful attempts to sell the airline, despite its valuable landing and parking slots at crucial international locations. While the deal was symbolically important, it highlights the challenges and obstacles faced by the government in privatizing state-owned assets, even when they possess valuable assets and strategic advantages in the global market. In the Finance Minister's February budget speech, the issue of disinvestment was notably absent, unlike in previous years when she announced specific targets or disclosed the names of candidates for privatization (Finance, 2023). It shows resistance from various stakeholders, such as employees, politicians, unions, and others, has contributed to the difficulties in privatization efforts. Further, covid-19 pandemic, global economic turmoil, and geopolitical tensions have also been cited as contributing factors.

Finding the right buyer is just one aspect of the challenge; the government must navigate legal obstacles, enhance technical expertise, and encourage states to proactively participate in privatization. While there is an acknowledgment of the need for more private ownership, the actual execution of privatization remains a complex task.

The Indian government's privatization drive is synonymous with "disinvestment" and "public sector reforms" (Arun & Nixson, 2000). Since the 1990s the government of India has implemented disinvestment in various sectors, including agriculture, banking, insurance, and the utility sector. Among these, the utility sector holds significant importance due to its provision of essential services that are vital for daily living and economic activities. These services include electricity, natural gas, water supply, and sewage removal, which are indispensable for households, firms, and industries to function efficiently. Beyond its immediate impact on daily life and economic activity, the utility sector also plays a critical role in public health and safety. It ensures the availability of safe drinking

water and proper sewage removal, which are essential for maintaining public health standards and preventing the spread of diseases. Given the significance of the utility sector, the present study primarily focuses on examining the impacts of disinvestment on the profitability, financial performance, and operational performance of Indian state-owned utility sector firms.

This study distinguishes itself from previous research in several ways. Firstly, it is the first study to examine the effects of disinvestment on the profitability, operational, and financial performance of utility sector firms in India. By focusing specifically on this sector, the study offers unique insights into the effect of disinvestment in the sector which is crucial for the country's infrastructure and economic development. Secondly, unlike previous studies, the present study specifically investigates the impact of disinvestment through a public offering on the performances of utility sector firms in India. This analysis provides valuable information on the market response to disinvestment in this particular sector. The initial phase of many privatization programs often involves partial privatization, where only shares that are non- controlling in nature are offered for sale on the stock market. It has been widely argued that this form of privatization has a limited impact since management control remains with the government. However, this standpoint ignores that the stock market can play a vital role in monitoring and incentivizing administrative performance, even in cases where the state retains. Controlling ownership. The stock market serves as a mechanism for monitoring and reward in managerial performance, thereby driving improvements in profitability, productivity, and investment (Gupta, 2005).To ensure the relevance of the study, the sample was chosen with the condition that the most recent public offering disinvestment occurred between 2011 and 2020. Finally, the study differs in terms of data, methodology, and findings. By utilizing a comprehensive dataset and employing robust estimation techniques, the research offers a rigorous assessment of the impacts of disinvestment on utility sector firms. The results of the present study have direct implications for policymakers, providing them with valuable insights to inform the formulation of a well-informed privatization policy in India.

The remainder of the paper is systematized as follow; section 2 covers the literature review. The analytical framework is discussed in section 3, section 4 describes the data & methodology. The empirical findings are reported in section 5 and section 6 is conclusion.

Literature Review

Numerous studies have assessed the performance of state-owned firms. The state-run firms are often believed to prioritize non-commercial and socially advantageous objectives which result in sacrificing profit motives (Bortolotti et al., 2002; Ghosh, 2010; Gupta, 2005; Mandiratta & Bhalla, 2017). Therefore, these firms are majorly less profitable compared to their private counterparts. Governments across the globe made continuous efforts to enhance the profitability and performance of state-owned firms. One major effort is to adopt the policy of privatization. However, studies confirm the effects of privatization are inconclusive. Somestudies support the positive outcomes of privatization whereas others suggest effects are either insignificant or negative (Mandiratta & Bhalla, 2017).

The study of (Megginson et al., 1994) examined 61 newly privatized firms across 32 different industries from 18 countries. The major finding of the study suggests privatization enhances the operating performance and profitability of firms. Moreover, the firm's dependence on debt was found to be significantly reduced, while average employment levels remained relatively stable. Similarly taking 79 firms from 21 developing countries during 1980-1992, the study of (Boubakri & Cosset, 1998) found significant improvements in performance indicators of firms, and an increase in employment level was also observed. During 1990 and 1996, (D'souza & Megginson, 1999) examined the operational and financial performance of 85 firms from 28 industrialized nations. The study found significant improvements in operating efficiency, profitability, dividend payments, output, and capital expenditure with a decrease in debt-equity ratios. However, an insignificant decline in employment levels are observed. (Bortolotti et al., 2002) focused on the global telecommunications industry and studied the operating and financial performance of 31 national telecommunication firms across 25 countries. In this study they aimed to identify the sources of performance improvement in privatized firms, considering the effects of competition, regulation, and ownership structure. The study found that the higher performance of privatized firms was largely due to regulatory changes, either alone or in association with ownership changes.

The impact of privatization on 103 firms in developed and emerging economies between 1993and 2003 was examined by (Mathur & Banchuenvijit, 2007). The study's findings indicated declining employment levels and statistically insignificant increases in profitability performance. Yet, further performance indicators viz net income

efficiency, leverage, dividend payouts, and sales output exhibited considerable improvement. (Naceur et al., 2007) focus on analyzing the financial and operating performance of 95 newly privatized firms(NPFs) in four North African and Middle Eastern countries, namely Tunisia, Morocco, Egypt, and Turkey.

They investigate the effect of privatization on various performance indicators of these firms. The major finding of the study indicates that NPFs achieved significant increases in operating and profitability efficiency after privatization. This suggests that privatized firms in these countries were able to improve their financial performance and enhance their efficiency in utilizing resources to generate output. Furthermore, the study reports significant declines in employment and leverage for the NPFs. This implies that privatization reduced the number of employees in these firms and decreased their reliance on debt financing. The decrease in leverage can be seen as a positive outcome, as it indicates a reduction in financial risk for privatized firms. The objective of (Bachiller, 2012) study is to assess the effect of privatization on the performance of firms in Europe. The study utilizes panel data consisting of 38 firms that underwent privatization. The researcher focuses on various performance indicators such as total product, net income, operating efficiency, profit, profitability, employment, risk, and leverage. To account for the diverse characteristics of different sectors, the sample is divided based on the goals of privatization, regulation, legal environment, and competition in every sector. The study examines the impact of privatization on the overall performance of companies by comparing their pre- and post-privatization performances. The findings of the study suggest that firms operating in the utility industry experience a significant improvement in overall performance after the privatization. This indicates that privatized firms in the utility. Sector demonstrates enhanced financial and operational outcomes compared to their pre- privatization performance.

Various studies have also focused on the impact of privatization in specific countries. For instance, (Sun et al., 2002) investigated how the share ownership plan of China affected the country’s state-owned firms and discovered a favorable correlation between government ownership and corporate success. Initial Public Offers (IPOs) made for the privatization of formerly state-owned businesses were examined by (Comstock et al., 2003). They found that an IPO's size has a significant long-term effect on stock performance.

The study of (Chen et al., 2008) focuses on examining the performance of the listed firms of China when the controlling shareholder

of their changes. The researchers specifically investigate two types of ownership transfers: transfers from one state entity to another state entity, and transfers from a state entity to a private entity. The study's findings indicate that there are positive and significant performance improvements when control of a listed firm is transferred to a private entity. This suggests that the performance of firms tends to improve when ownership is transferred from a state entity to a private entity. However, when the transfer of control occurs between different branches of the state, there is little change in performance observed. The researchers also observe that when listed firms' control changes, the stock market reacts favorably to it. The greatest positive impact is seen when ownership is transferred to private ownership. This implies that investors perceive a change in control of a private entity as a favorable development, leading to an increase in the stock market value of the firm.

The impact of privatization on Sri Lanka's plantation industry was examined by (Peter et al., 2010). Significantly, favorable outcomes in the post-privatization phase were reported by the study. To examine the effects of organizational changes and privatization on the performance of state-owned enterprises (SOEs), (Alipour, 2013) carried out research in Iran. The study examined various performance indicators such as efficiency, leverage, profitability, output, and risk. The empirical results indicated negative effects on profitability and no effect onsales efficiency. In contrast to earlier studies, this study observed an increase in leverage and overall risk levels, which were expected to decline. The authors concluded that economic adjustments, along with ownership changes, were necessary to achieve positive outcomes from privatization. Using a sample size of four privatized banks and four public sector banks from 2005 to 2012, the study of (Kausar et al., 2014) compares the financial performance of privatized banks with public sector banks in Pakistan. The study examines the mean differences between public sector banks and privatized banks after computing various kinds of ratios to evaluate financial performance. The study's conclusions imply that private banks are more profitable than state- owned banks. This implies that privatized banks tend to generate higher profits than their public sector counterparts. Additionally, the study indicates that privatized banks outperform public sector banks in terms of operating efficiency. The ratios of operating efficiency analyzed in the study show significantly positive means for privatized banks, suggesting that they are more efficient in utilizing their resources to generate output.

Numerous studies have looked at how privatization affects state-owned enterprises (SOEs) performance in India. A thorough understanding of the disinvestment policy of India and its effects has been

provided by these studies. While some studies revealed mixed outcomes in various performance metrics and negative effects on profitability, others indicated positive results, demonstrating the increased performance of partially privatized SOEs. In this context, the study conducted by (Ghosh, 2010) analyzes the response of banks to privatization. The study utilized data from all state-owned banks from 1990-2006. According to the study's findings, banks that are entirely controlled by the state typically have lower profitability than banks that are partially privatized. Furthermore, the study shows that even after the privatization process, the performance gains seen in banks that have undergone partial privatization remain stable.

Moreover, the results suggest that privatization improves several bank performance indicators. Specifically, it leads to improvements in profitability, efficiency, and overall bank soundness. Additionally, privatization is found to be associated with a decrease in bank risk. (Gupta, 2005) used data from state-owned firms in India for his study. Partial privatization has been shown to improve several performance-related factors. Specifically, it was observed that limited privatization leads to improvements in investment, profitability, and productivity. These findings challenge the notion that partial privatization has little impact. They suggest that even when the government retains control, the involvement of the stock market can have a positive influence on the performance of state-owned enterprises. The stock market serves as a mechanism for monitoring and rewarding managerial performance, thereby driving improvements in profitability, productivity, and investment.

Central Public Sector Enterprises (CPSEs) that were disinvested in India through public share-offering mode between 2003 and 2012 are the subject of the study of (Mandiratta & Bhalla, 2017) for their financial and operating performance. To assess the effectiveness of the CPSEs, use panel data estimate methods in addition to conventional pre-versus-post privatization comparisons. Their findings indicate a significant increase in operating efficiency following the disinvestment. This suggests that the privatized CPSEs experienced improvements in their operational effectiveness and productivity after the disinvestment process. However, the study does not find significant results in terms of profitability. This implies that the privatization of the CPSEs did not lead to a substantial increase in their profitability position. In a subsequent investigation, (Mandiratta & Bhalla, 2021) look into how disinvestment affects the operational and financial outcomes of 26 Central Public Sector Enterprises (CPSEs) that are listed on the Bombay Stock Exchange (BSE). Between 2000 and 2014, these CPSEs were sold off via the stock market

mechanism. The major finding of the study is that there is a statistically significant decline in profitability ratios once these CPSEs are disinvested. This suggests that the profit margin of the disinvested CPSEs was negatively impacted by the privatization process that was implemented through the stock market.

Overall, the literature on privatization's impact on post-privatization financial performance, and operating performance is diverse, with studies yielding both positive and negative findings. The outcomes can vary depending on the country, industry, specific privatization methods, and other contextual factors.

The present study focuses on comparing the profitability, financial performance, and operating performance of ten leading state-owned utility sector firms before and after their disinvestment through public share offerings between 2011 and 2020. The study acknowledges that, for several reasons, disinvestment agreements adopted after 2000 are different from those first made in the 1990s. With a few exceptions involving public offerings, the majority of disinvestment contracts were initially carried out through auctions during the early years of economic policy changes associated with privatization. Subsequently, from 2000 to 2004, strategic sales became the preferred approach, involving the transfer of management control and ownership rights from the public to private sector entities. After that, the government's favored method of disinvestment gained momentum and was implemented through offer-for-sale and public offerings. This is why disinvestment arrangements were executed differently after 2000 than they were in the 1990s (Mandiratta & Bhalla, 2017). Previous research studies in the Indian context primarily focused on analyzing disinvestment deals from 1991 to 2010, during the period of partial privatization. For this reason, it is important to look at the different disinvestment contracts that were made after 2010. This study contributes to the existing literature on disinvestment in state-owned utility sector firms by providing fresh empirical evidence on the performance changes, particularly through public offerings in the Indian economy.

Analytical Framework

To assess the changes in profitability, financial performance, and operating performance of disinvested utility sector firms, the present study identifies different performance indicators and their proxies from existing literature on privatization (Alipour, 2013; Boubakri & Cosset, 1998; Mandiratta & Bhalla, 2017; Mathur & Banchuenvijit, 2007; Megginson et

al., 1994). Table 1 presents these indicators along with their proxies. The hypothesized outcomes column uses the subscripts A and B to represent the expected results after and before disinvestment.

Performance Indicators	**Proxies**	**Null Hypothesis**	**Alternative Hypothesis**
1. Profitability	Return on sales (ROS) = net income/net sales	ROSA = ROSB	ROSA > ROSB
	Return on assets (ROA) = net income/total assets	ROAA= ROAB	ROAA > ROAB
	Return on equity (ROE) =net income/equity	ROEA = ROEB	ROEA > ROEB
2. Operating performance	Sales efficiency (SALEFF) = Sales/No. of employees	SALEFFA=SALEFFB	SALEFFA>SALEFFB
	Net income efficiency (NIEFF) = Net income/No.of employees	NIEFFA = NIEFFB	NIEFFA> NIEFFB
3. Financial performance	Investment (INVS)	INVSA = INVSB	INVSA > INVSB
	Inventories (INVT)	INVTA = INVTB	INVTA > INVTB
	Loans and advances (LNAD)	LNADA = LNADB	LNADA < LNADB
4. Employment	Total employment (EMPL) = Total no. of employees	EMPLA = EMPLB	EMPLA < EMPLB
5. Leverage	Debt-equity ratio (LEV) = Debt/Equity	LEVA = LEVB	LEVA < LEVB

Table 1- Based on the existing literature, the sample utility sector firms are expected to get the following outcomes
Source: Review of literature

Based on the variables mentioned above, Fig-1 represents the analytical framework

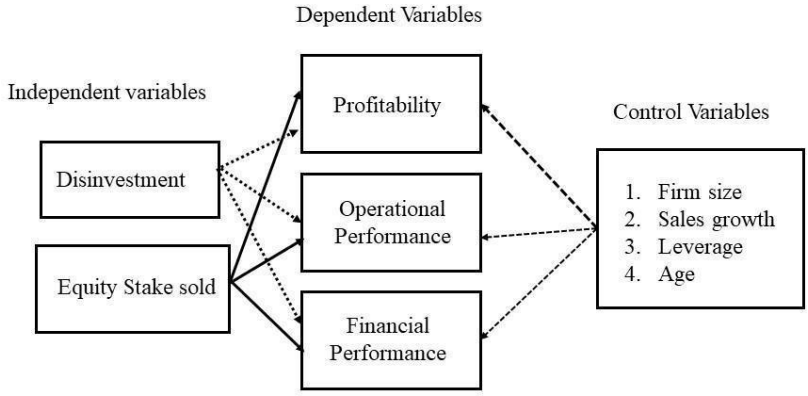

Figure 1- Analytical framework
Source: Author's Formulation

An analytical framework plays a crucial role in comprehending the connection between dependent and independent variables. Figure 1 illustrates the analytical framework, presenting how disinvestment correlates with the profitability, financial performance, and operating performance of sample firms. The framework shows various control variables such as firm size, age, sales growth, and leverage that could influence the firms' profitability and performance. By considering these variables, the present study isolates and understands the specific impact of disinvestment on the performance indicators of the selected sample firms.

Data & Research Methodology

The present study examines the profitability, operating performance, and financial performance of state-owned utility sector firms in India that underwent successive disinvested through public offering mode from 2011 to 2020. The ratios have been computed by using the ratio analysis, over the nine years—four years prior to and four years following the disinvestment. Return on equity, return on assets, and return on sales are three indicators used to measure profitability. Operational performance is measured using sales efficiency and net income efficiency as proxies. Investment, inventories, and loans and advances are the proxies for financial performance. All data are collected from the Centre for MonitoringIndian Economy (CMIE) prowess database.

Independent Variables

Two distinct variables are used in the present study to break down the effects of disinvestment. Disinvestment: A dummy variable that considers = 1, after disinvestment = 0, otherwise Equity stake sold: It is the percentage of equity stake sold by the government during the sample period (Ghosh, 2008).

Control Variables

Previous studies showed that several firm-specific variables such as firm size (Alipour, 2013), sales growth (Alipour, 2013; Mandiratta & Bhalla, 2017), leverage (Alipour, 2013; Astami et al., 2010; Mandiratta & Bhalla, 2017) , and age (Ghosh, 2008) also affect the performance of the firms. Therefore, the present study considers these variables and tries to control their impact on dependent variables. A brief overview of these control variables is:

Firm size: This is calculated by taking the natural log of the total assets of the firms. Sales growth: This variable is calculated by the formula,

$$\text{Sales Growth} = \frac{\text{current sales} - \text{previous years sale}}{\text{Previous year's sale}}$$

Leverage: It is the ratio of total debt and liabilities over the shareholder's equity, which means Debt Leverage = Equity

Age of the firm: This is calculated by taking the natural log of the number of years from the incorporation year of the firm.

Sample

Disinvestment in India involves various methods, including public offerings, strategic sales, exchange-traded funds, share buybacks, and asset sales. Among these, public offerings are highly significant as they allow public participation and potentially increase a firm's value. This can lead to improved operational efficiency and productivity, fostering economic growth. The National Stock Exchange (NSE) in India is a major stock exchange with the largest market capitalization. It maintains a list of firms where the government holds a stake of 51% or more. Focusing on firms where the government has substantial control and influence provides insights into the potential policy implications of disinvestment. The list given by NSE comprises a total of 66firms in 2023 where the government holds a stake of over 51% or more. For the study's focus on the impact of disinvestment on the utility sector, ten leading firms were selected based

on their market capitalization. These firms collectively represent 38% of the overall market capitalization, while the remaining 56 companies represent the rest. The study specifically considered firms that underwent public offering disinvestment between 2011 and 2020 to offer insights into the contemporary impact of disinvestment on state-owned enterprise performance when the government retains control.

Therefore, the sample for the present study is the NSE-listed ten leading utility sector firms with the most recent public offering disinvestment between 2011 and 2020.

Sl No.	Firms	Year of Incorpo-ration	First Divestment Year	Last Divestment Date	Mode of Disinve-stment
1	BHARAT ELECTRONICS LTD. (BEL)	1954	1994	22-02-2017	Public Offer
2	COAL INDIA LTD	1973	2010	31-10-2018	Public Offer
3	National Buildings Construction Corporation Limited (NBCC)	1960	2012	20-10-2016	Public Offer
4	National Hydro Electric Power Corporation Pvt Ltd (NHPC)	1975	2009	27-04-2016	Public Offer
5	Neyveli Lignite Corporation India Limited (Nlc India)	1956	2000	25-10-2017	Public Offer
6	National Mineral Development Corporation Pvt Ltd (Nmdc)	1958	2008	09-01-2018	Public Offer
7	National Thermal Power CorporationPvt Ltd. (Ntpc)	1975	2004	29-08-2017	Public Offer
8	Oil & Natural Gas Corp.Ltd. (Ongc)	1993	1995	01-03-2012	Public Offer
9	Oil India Ltd. (Oil)	1959	2009	01-02-2013	Public Offer
10	Power Grid Corp. Of India Ltd.	1989	2007	03-12-2013	Public Offer

Table 2- Sample Firms
Source: National Stock Exchange, CMIE database

Methodology

The current study employs two types of statistical analyses on the sample firms to confirm the authenticity and consistency of the empirical results. For the traditional univariate tests of performance comparison, the standard methodology developed by MNR (Megginson et al., 1994) has been employed. The analysis involves various performance indicators such as Profitability, Operating Performance, Financial Performance, Employment, and Leverage, as presented in Table 1. Ratio analysis is used to calculate different ratios for each firm over 9 years (4 years before and after disinvestment), considering the year of disinvestment as 0. Each firm's mean values for each variable are then determined separately for the pre and post- disinvestment periods (-4 to -1 and +1 to +4), excluding the year of disinvestment. Then, the Wilcoxon signed-rank test is applied to ascertain changes in the set of performance indicators between the pre- and post-disinvestment periods.

Following the univariate tests, panel data estimation techniques are employed to examine the effects of disinvestment on the profitability, financial performance, and operating performance of the disinvested sample firms. These techniques control for the influence of other control variables. It took a panel dataset spanning 4 years before and after the disinvestment and includes the year of disinvestment itself. The Hausman test is employed to determine whether to apply random effects or fixed effects regression. Acceptance of H0 implies that either random effects or fixed effects regression can be applied in the study while the alternative hypothesis (H1) suggests a significant difference between the results of random effects and fixed effects (Sanati & Bhandari, 2023).

The null hypothesis (H0) in the current investigation has been accepted in every instance as a result of the Hausman test. The influence disinvestment on firm performance is examined using the random effects model since there are no appreciable variations in the results between FE and RE. For firm i at time t the panel regression equation is,

$$Perf_{it} = \alpha + \beta_1(Disinvestment) + \beta_2(Equity\ stake\ sold) + \beta_3(Control\ variables) + \varepsilon_{it} \ldots (1)$$

Where Perfit = Performance of the ith firm at the period of t,i = ith firm where i = 1, 2,…, 10t = tth period of time where t = 1, 2,…, 9

The post-disinvestment dummy variable and the percentage of shares sold

have a positive effect on the sample firms' profitability position, financial performance, and operating performance, as indicated by the positive sign of the coefficients of the disinvestment and equity stake sold variables in equation (1).

Empirical Findings

Wilcoxon-signed rank test

Table 3 presents the findings obtained from using the Wilcoxon signed-rank test on the sample. The table includes performance indicators and corresponding empirical proxies. For each empirical proxy, the mean values are calculated separately for the 4 years before and after disinvestment. The table displays the changes in mean values (after versus before disinvestment) for each proxy. The outcomes of the Wilcoxon signed-rank test, including the z-statistic and p-values, are reported to assess significant differences in mean values in the interim between the disinvestment phases.

Performance Indicators	N	Mean Before	Mean After	Mean Change	Z-test for Difference in Perfor-mance	p-value	Percentage of Firms That Change as Predicted
Return on sale (ROS)	10	4.66	1.37	-3.29	-2.5	0.01242**	20.0
Return on assets (ROA)	10	0.13	0.1	-0.03	-1.17	0.24	40.0
Return on equity (ROE)	10	-78.14	3.09	81.23	-0.97	0.33204	30.0
Sales efficiency (SALEFF)	10	1.16	1.88	0.72	-1.48	0.14	60.0
Net income efficiency (NIEFF)	10	1.94	1.63	-0.32	-0.15	0.88	50.0
investment	10	2123.99	7013.97	4889.98	-2.8	0.00512***	100.0
inventories	10	1708.49	2565.74	857.25	-2.6	0.00932***	90.0
loans and advances	10	10269.33	12719.87	2450.54	-1.99	0.0466**	70.0
Total no. of employees (EMPL)	10	13066.22	14751.36	1685.14	-0.56	0.57548	70.0
Debt-equity ratio (LEV)	10	0.4	0.6	0.2	-2.25	0.0247**	10.0

Table 3- Findings of Wilcoxon-signed rank test

Source: Author's estimation

Note "*", "**", "***" shows the significant value at 10 per cent, Five per cent, One per cent level ofsignificance respectively

The percentage of firms whose proxy values change in the anticipated direction for each variable is displayed in the table's final column. Indicates that higher profitability following privatization may result from the government transferring managerial authority and cash

flow rights to private managers. The government maintains management rights and holds more than 50% of the stock in the study's sample even after disinvestment. This implies that the study's conclusions may differ from those of other studies due in part to the existence of government ownership.

The statistical results indicate that there were no significant changes detected in both sales efficiency and net income efficiency during the post-disinvestment period.

Table 3 also reports there are positive statistically significant increases in financial performance indicators meaning disinvestment impacted investment and inventories positively. Disinvestment can positively impact investment, inventories, and loans and advances by providing financial resources for investment, streamlining operations, improving inventory management, enhancing financial position and creditworthiness, and facilitating strategic restructuring.

In the sample, the average number of employees has increased, although this change is not statistically significant. Furthermore, the empirical results indicate a statistically significant increase in the debt-equity ratio, which contradicts the hypothesis presented in Table 1.

According to (Mathur & Banchuenvijit, 2007), it was expected that debt levels would decrease after disinvestment due to the withdrawal of debt guarantees by the government. However, this may not be the case for the firms in the present sample. (Mandiratta & Bhalla, 2017) support the present result, which states that market conditions and investor perceptions can also influence the debt-equity ratio after disinvestment. If the market perceives the firm to have lower equity value or higher risk post-disinvestment, it may lead to reduced availability of equity financing or higher cost of equity capital. As a result, the firm may resort to debt financing to meet its capital requirements, leading to an increase in the debt-equity ratio.

Panel Regression Results

The current study analyzed cross-sectional fluctuations involving time-series effects using the random effects regression technique. According to the study's specifications, every essential assumption—including multicollinearity, autocorrelation, and heteroscedasticity—was carefully considered and taken into account. Table 4 presents the findings from the panel data analysis.

Variables	**Dependent Variables**															
	Profitability						**Operational Performance**				**Financial Performance**					
Independent and control variables	Return on Sales		Return on Assets		Return on Equity		Sales Efficiency		Net Income Efficiency		Investment		Inventories		Loans & Advances	
	(ROS)		(ROA)		(ROE)		(SE)		(NIE)		(INVS)		(INVT)		(LNAD)	
Intercept	-1.65575	0.27	-1.05	0.647	**19.25716**	**0.008*** **	-2.37353	0.30	-4.66453	0.186	-12.8861	0.044	-6.68671	**0.087**	-1.32473	0.575
Disinvestment	-0.1757	0.885	0.01	0.908	**-0.54412**	**0.041** **	**0.358538**	**0.00*** **	0.133675	0.405	1.055758	**0.000**	-0.22747	0.176	0.118706	0.281
Equity stake sold	0.002924	0.296	0.01	0.549	0.006842	0.839	0.010622	0.336	0.007331	0.715	0.049372	0.126	0.004711	0.788	-0.00379	0.757
Firm size	0.223048	0.23	0.02	0.869	**-0.99407**	**0.021** **	**0.286307**	**0.051***	**0.529589**	**0.018** **	1.960184	**0.000**	1.364344	**0.000**	**1.162876**	**0.000**
Sales growth	-0.23405	0.284	**0.28**	**0.097***	0.154691	0.621	**0.415048**	**0.00*** **	0.095759	0.616	-0.09466	0.786	0.144629	0.448	0.030791	0.817
Leverage	-0.28576	0.486	**-0.66**	**0.00*** **	0.146969	0.74	0.024618	0.907	-0.28932	0.359	-0.93223	**0.071**	0.046324	0.888	-0.28447	0.132
Age	-0.40529	0.622	-0.41	0.248	**-2.09381**	**0.074***	-0.16914	0.672	-0.457	0.445	-0.08281	0.942	-0.13926	0.877	-0.52879	0.206

R^2			0.35													
Wald Chi	7.51	0.2761	**24.08**	**0.005*** **	**39.47**	**0.00*** **	**53.60**	**0.00*** **	**11.70**	**0.0691***	83.10	**0.00**	36.56	**0.00**	**105.20**	**0.00**

Table 4: Findings of Panel Data Analysis
Source: Author's estimation
Note "*", "**", "***" shows the significant value at 10%, 5%, 1% level of significance respectively

The findings from Table 4 indicate a significant negative impact of disinvestment on return on equity (ROE), contradicting the hypothesis presented in Table 1, which suggested a positive impact of disinvestment on ROE. Disinvestment can have a detrimental effect on a firm's ROE due to various factors. Firstly, it can weaken the firm's competitive position in the market, resulting in a decline in market share, customer base, and pricing power. This decline in profitability directly affects the ROE. Additionally, negative investor sentiment surrounding the disinvestment decision can lead to a decrease in the firm's stock price and market capitalization, further impacting the ROE negatively. On the other hand, the results show a positive and significant impact of disinvestment on sales efficiency, supporting previous literature (Boubakri et al., 2004;Mandiratta & Bhalla, 2017; Megginson et al., 1994).

Disinvestment can enhance a firm's sales efficiency by divesting non-core or underperforming assets, and by redirecting its focus and resources towards its core competencies and profitable business segments. Furthermore, the proceeds from disinvestment can be reinvested in technologies, sales channels, or distribution networks, enhancing sales efficiency and expanding market reach. Lastly, disinvestment can reduce organizational complexity and bureaucratic hurdles, facilitating faster decision-making, streamlined processes, and improved coordination among sales teams. Disinvestment positively impacted the investment of the firms. The findings presented, along with the previous evidence on performance, indicate that disinvested firms increase their expenses from investment and enhance performance to compete with the private sector (Megginson et al., 1994). Again, disinvestment can enhance the overall financial health of the firm by reducing debt levels or improving liquidity, which in turn strengthens the firm's capacity to undertake new investments. Additionally, disinvestment can streamline the firm's operations, leadingto cost savings and increased operational efficiency. These cost savings can be redirected towards investment activities, fostering growth and

productivity. Lastly, from Table 4, it is seen that disinvestment has no statistically significant impact on ROS, ROA, NIE, INVT, and LNAD.

The variable equity stake sold was found to be statistically insignificant about profitability, financial performance, and operating performance. In the case of control variables firm size is the most significant variable which has been impacted most. ROA and SE are positively impacted by sales growth. Sales growth positively impacts return from assets (ROA) by increasing revenue generation, improving asset utilization, and providing economies of scale, indicating market demand, and attracting investment opportunities. These factors collectively contribute to a higher sales return from assets for the firm. On the other hand, sales growth positively impacts sales efficiency by leveraging economies of scale, stimulating investment in sales activities, and driving overall business performance. Leverage only affects the ROA and investment significantly. The firm's age was not found to have a significant impact on profitability and other performance levels.

Conclusion

The present study compares the pre- and post-disinvestment performance evaluation of Indian state-owned utility sector firms that were successively disinvested through public offerings mode. The empirical results obtained through univariate analysis and the Wilcoxon signed test suggest that there are no significant improvements in profitability (in fact there is a sharp decline in ROS) or operating performance in the post-disinvestment period. However, a positive and significant impact is observed on financial performance. Additionally, the study notes a significant increase in leverage and an insignificant increase in employment, which contradicts the findings of (Mathur & Banchuenvijit, 2007). The results emphasize the significance of proactive state initiatives to meet optimal goals for employment and leverage in state-owned utility sector firms in India.

The results from panel data show a positive & significant impact of disinvestment on sales efficiency, while no significant impact is found on profitability. Results show that disinvestment has an adverse impact on ROE. The study also identifies firm size as a crucial determinant of firm performance. The lack of significant improvements in profitability is attributed to the nature of partial privatization transactions in India.

Even after disinvestment, the government retains substantial control and ownership rights of 51 percent or more in the disinvested

firms. This is in contrast to the transfer of cash flow rights and control observed in complete privatization cases, which has been linked to enhanced profitability in previous literature (Boycko et al., 1996).

The results of the study indicate that the existing disinvestment policy in India has to be changed significantly. The study emphasizes the need for major changes coupled with improvements to enhance profitability and operating performance in these state-owned utility sector firms. The study supports the suggestion put forward by the advisory panel of NITI Aayog, which recommends reducing the state's holding to less than 50 percent at once, instead of selling ownership in bunches. The privatization program is a crucial component of the economic reforms introduced in India. These measures reflect the government's commitment to address the challenges faced by state-owned firms and improve their profitability and performance, leading to the overall development of the Indian economy.

Notes

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